Performance Management
Action Item 3: Coordinated Ecosystem Monitoring and Assessment Program

Prepared by: Nathalie Hamel and Ken Currens

Presented by: Chris Townsend and Ken Currens; Rob Duff will present an overview of the monitoring program draft Charter.

Proposed Action: Decision

Summary: The Monitoring Launch Committee, at the direction of the Leadership Council, has drafted a charter for a Puget Sound assessment and monitoring program supported by the Puget Sound Partnership. The charter describes an organizational framework that includes broad membership of agencies, tribes, businesses, local governments, and other stakeholders in a steering committee; provides transparency and accountability; links monitoring priorities to management decisions; is based on the best available science about monitoring; builds on existing programs and improves coordination among existing entities. Partnership staff and the monitoring community need a decision about whether to implement the charter or to wait for development, organization, and funding of monitoring under a private, independent institute, which is an alternative but undeveloped approach.

Background: The Washington State Legislature gave the Puget Sound Partnership responsibility through roles of the Science Panel and Leadership Council to "guide the implementation and coordination of a Puget Sound assessment and monitoring program" (RCW 90.71.060). In complementary legislation, the Legislature also directed the Department of Ecology to develop a Monitoring Consortium to help integrate ongoing monitoring of stormwater, water quality, watershed health and other indicators. As part of its work the Monitoring Consortium provided a report to the Legislature in 2008 that recommended that the Partnership review and decide between two different organizational models for an integrated, coordinated monitoring and assessment program: a centralized, state agency-based structure housed at the Partnership or an effort led by an independent, private institute.

In May 2009, the Leadership Council, informed by the Monitoring Consortium's report, and the stakeholder discussion deferred choosing between these two alternatives until June 2010. In July 2010, the Leadership Council decided to task a multi-stakeholder Launch Committee to develop a charter that would describe the organizational framework of a coordinated ecosystem monitoring program supported and coordinated by the Partnership that would fulfill the essential characteristics for monitoring recommended by Monitoring Consortium. The Launch Committee has completed this task. The charter and recommendations describe a

hybrid between the two alternatives suggested by the Monitoring Consortium. It is both consistent with responsibility assigned to the Partnership and in contrast to the centralized, state agency-based model, the program builds on an independent, multi-stakeholder Steering Committee to develop monitoring plans, direct technical workgroups and support analyses. Likewise, in contrast to having the Science Panel direct the program, it uses the Science Panel for independent peer review and feedback to guide the program. It also provides flexibility for either centralized or decentralized monitoring approaches depending on the technical nature of the monitoring challenge, sources of funding, and organization of expertise.

The use of a private, independent institute to do the monitoring and assessment of the Puget Sound remains the preference of some stakeholders, although none have developed details of how that alternative might realistically function. At the Ecosystem Coordination Board meeting in February 2011, the Puget Sound Environmental Caucus and the Association of Washington Businesses requested that the Partnership evaluate the independent institute alternative against the proposed charter completed by the Launch Committee. Likewise in a letter to the Partnership, Department of Ecology and the Governor's office, they requested a private, independent entity as an alternative to the structure developed by the Launch Committee and they outlined reasons for an independent governance model.

Analysis and Staff Recommendations:
1. We recommend that the Leadership Council endorse the draft charter and direct staff to form a Steering Committee to implement the monitoring program consistent with the recommendations of the Launch Committee and charter.

The proposed organizational structure combines strengths of the two alternatives proposed by the Monitoring Consortium. These include mechanisms to ensure transparency, accountability, and build trust; a strong link to management decisions; and strategic and efficient use of scarce resources, such as:

- An independent, multi-stakeholder Steering Committee to oversee development and implementation and shape priorities for monitoring under the Action Agenda.
- Integration of monitoring findings into Partnership products (Action Agenda, Strategic Science Plan, Biennial Science Work Plan, and State of the Sound report) and into the needs of our partners in monitoring.
- Use of the Partnership's Science Panel to guide the program through review and feedback.
- Responsibility for monitoring, data sharing, and data analysis at all levels.
- Commitment to third party, independent review of the program.
- Building on existing resources, expertise, and organizational support at state and federal agencies, tribes, local governments, business, academia, and citizen groups.

Finally, it allows a coordinated ecosystem monitoring and assessment program to move forward without additional delay.

2. We recommend that the Partnership commission a review of the monitoring program in two years by an objective and independent entity. The review should focus on whether essential characteristics, particularly transparent decision-making, availability and credibility of data, and accountability and trust, are achieved. In the event the review finds deficiencies, deliverables of the review should include information on an alternative governance structure that could better meet the essential characteristics. Deliverables should be specific about the structure of the governance model, roles and responsibilities of program components, how the program would be funded, relationships to the Puget Sound Partnership and other entities, and any statutory changes required.

Attachments:

- Summary of Ecosystem Coordination Board discussion
- Draft charter
- Recommendations for criteria, membership and appointment of a Steering Committee

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Summary of the Input and Discussion at the Ecosystem Coordination Board on the Draft Charter and Governance for the Puget Sound Coordinated Ecosystem Monitoring and Assessment Program

Held at the Ecosystem Coordination Board Meeting
February 3, 2011, Olympia, WA

Purpose

This meeting had two purposes. First, it provided the Ecosystem Coordination Board (ECB) and interested parties with the opportunity to learn and ask questions about the draft Charter for the Puget Sound Coordinated Ecosystem Monitoring and Assessment Program. The draft Charter was crafted by the Launch Committee, a multi-stakeholder, multi-agency team, as tasked by the Puget Sound Partnership. The Launch Committee, at the direction of the Leadership Council, prepared a draft Charter for a monitoring program that is supported and coordinated by the Puget Sound Partnership. For the Launch Committee, Nathalie Hamel, Monitoring Program Manager from the Puget Sound Partnership, presented the draft Charter. For a copy of the draft Charter and more information about the Launch Committee and its work see, http://sites.google.com/site/pugetsoundmonitoring.

Second, the meeting provided interested parties with the opportunity to present and discuss proposals outlining the specifics of alternative governance models for the monitoring program. On behalf of the Puget Sound Environmental Caucus and the Association of Washington Businesses, Dave Peeler, Director of Programs for People For Puget Sound, presented a request to comparatively evaluate a private institute model with the model embodied in the Launch Committee's draft Charter.

These discussions were designed to inform the Ecosystem Coordination Board and the Leadership Council of stakeholder views and the specifics of alternative approaches to the draft Charter. The Leadership Council will consider endorsing the draft Charter developed by the Launch Committee at their meeting on February 17, 2011.

Input and Discussion Summary

We heard from representatives from action areas, businesses, the Washington Department of Ecology, the Puget Sound Partnership, cities, environmental organizations and the Leadership Council. There was recognition early on of the importance of the program and that we all share the same aspirations and objectives for the program. However, how to attain that desirable outcome remains an open question. There were concerns voiced about transparency, objectivity and credibility of a state-agency based model. Leadership Council members expressed concern about why the effort has taken so much time, and that there is a need to move forward.

Disclaimer: What follows are notes taken by staff during the meeting, as edited by the facilitator (Michael Fraidenburg, Praxis Northwest). These should be read as notes on the main points made by the speakers and not as an authoritative record or transcription of the speakers' views. Any use of these notes should be qualified to recognize this limitation and anyone wishing to quote a participant named in these notes should directly contact the speaker and obtain his/her approval.

Presentation on the Draft Charter

Nathalie Hamel provided background on what monitoring is and why it is important for Puget Sound recovery. She stressed the need to determine if the Sound is healthy and if we are moving in the right direction toward recovery. She then provided a quick history of the monitoring program and how the Launch Committee built off the work of the Monitoring Consortium[i]. She defined the purpose for the Charter as not being a monitoring plan but, rather, a format for designing and implementing the monitoring work.

Presentation on the Alternative Proposal from the People For Puget Sound and the Association of Washington Businesses

Kathy Fletcher, ECB Member and People for Puget Sound: Provided an introduction. She noted that there is agreement among the parties that hold differing views on the governance of the program and about the aspirations and objectives for creating a high quality program. She observed that what remains is an open question about how to attain that desirable outcome.

Dave Peeler, Launch Committee Member and People for Puget Sound: Presented a history of the Monitoring Consortium and the legislation leading up to the need to create a monitoring program. He noted that no direction was given to develop the alternative structure and there was not a substantial discussion of a third-party governance structure. He said that forming an independent entity could take months, not longer as some people have feared. Dave pointed out that what is missing is scoping out what a third-party option would look like and how well it can address stability, transparency, communications, and other elements desired in a monitoring program. He stated that there is a need to have that information before moving forward. Dave asked the Ecosystem Coordination Board to support their request to conduct a 'side-by-side' comparison of the two governance models before committing to the model embodied in the Launch Committee's draft Charter. This recommendation is explained in detail in a February 1, 2011 letter to Jay Manning, Chief of Staff, Washington State Governor's Office. Contact Dave (dpeeler@pugetsound.org) for a copy of this correspondence.

Discussion

Dave Peeler, Launch Committee Member and People for Puget Sound: Noted that the draft Charter places data analysis and priority setting at the Puget Sound Partnership. He pointed out that this means that credibility, trust, and transparency are all housed in one place.

Sono Hashisaki, Springwood Associates (and Tulalip Tribes): Noted that she has participated in Launch Committee's work with Terry Williams, Executive Director of Natural Resources for the Tulalip Tribes. She noted that a Steering Committee with representatives from stakeholders and science groups may not work as these two groups have different needs. Sono proposed that there is a need for a conversation about the role and reporting of the Steering Committee. She also observed that a Steering Committee may be more flexible if it is more independent from state government.

Dan Wrye, ECB Member and Pierce County Surface Water Management Program Manager: Noted that the ECB talked about this issue about 1.5 years ago. Noted his appreciation for Martha Kongsgaard's call for the Leadership Council to revisit this issue. Dan observed that the Stormwater Working group was housed in the Department of Ecology because no other good option existed. The reasons why he supports independent governance are objectivity, independence, and trust.

Naki Stevens, ECB Member and Department of Natural Resources Executive Policy Advisor on Puget Sound: Noted that the Launch Committee did not address the governance issue, which was a problem. She stated that, though her Department has not stated a conclusion on this issue, the responsible entity for achieving the goal remains the same under either approach. She believes that there is a need for a credible process, with a lot of emphasis on accountability. She noted that she is intrigued by the notion that an independent entity could provide the accountability function.

Sam Anderson, ECB Member and Master Builders Association of King and Snohomish Counties: Agreed with Naki Stevens. He stated that the issue is not fully vetted by the business community, but that he believes they would give a strong advocacy for taking a serious look at an independent entity for governance.

Rob Duff, Launch Committee Chair and Environmental Assessment Program Manager, Washington Department of Ecology: Noted that in the draft Charter the monitoring assessments will happen at the level of Work Groups. He recalled past experience showing that state and federal agencies participating in the Puget Sound Ambient Monitoring Program tried to make the link between science and management application but, despite good efforts, it never happened. He pointed out that, in the model articulated in the Launch Committee's draft Charter, the Puget Sound Partnership will not subsume all the functions; responsibility and independence for data gathering and analysis will be delegated to the Work Groups.

Gerry O'Keefe, ECB Member and Acting Director, Puget Sound Partnership: He is concerned that the Partnership does not have the capacity to do the work and has concerns about building a budget capacity to support the needed work. He would rather not delay setting up the monitoring program.

Josh Baldi, ECB Member and Washington State Conservation Commission: Stated that the Legislature is looking for us to make progress. He expressed concern that monitoring is significant for the new SWG permit, and that the more regulatory consensus we have the more successful will be this permitting. He is concerned about the search for perfection being the enemy of progress.

Nathalie Hamel: Noted that the Launch Committee, who drafted the charter, feels that it is a good path forward. She, too, believes there should not be a delay moving forward with the first step being the Leadership Council LC directing the formation of the Steering Committee and asking them to move forward using the Puget Sound Partnership and existing EPA funding for implementation. Nathalie stated that this governance question will be a topic on the next Leadership Council agenda and that ECB members and others are welcome attend and provide additional input.

Martha Kongsgaard, Leadership Council Chair: Noted her confusion and concern about the governance question. She indicated she doesn't understand what the issue is and the discussion so far is, in her mind, unclear and contradictory. Despite the governance question being under discussion she observed that it is not inconsistent to get the Steering Committee up and running. She stated that the core questions are how best to utilize this body and what is the best format that helps managers understand the issue.

Dan O'Neal, Leadership Council: Noted that he finds the governance question to be a rewarding and interesting discussion. He indicated he is confused about why it is taking so long to resolve. He noted the model used at Department of Health where no one questions their data. He argued that if an independent body is needed, great; but it is time to do something—i.e., the Leadership Council should make a decision. He noted that he has no problem with an independent entity but does have questions about who will pay for it. He offered a reminder that a third-party solution is not necessarily more independent. He observed that the whole Puget Sound recovery effort is incurring a risk by not being able to answer questions about successes and failures of restoration.

Dan Wrye, ECB Member and Pierce County Surface Water Management Program Manager: Expressed his concern about monitoring noting that he has five staff working on monitoring because of their permit requirements but he is not sure if these new monitoring efforts will become new obligations on his agency thereby displacing his current priorities and staff allocations. He expressed concern that elevating the monitoring issue to the regional level may not have meaning to him.

Dan O'Neal, Leadership Council and Washington State Transportation Commission: He observed that there seems to be a concern first over what is being monitored and second about the results. He stated that there is a need for faith in objectivity of the results in an independent entity. He cited as an example the value he finds in the trends he has seen in the Stormwater Working Group's results.

Rob Duff, Launch Committee Chair and Environmental Assessment Program Manager, Washington Department of Ecology: Stated there is a need to communicate and coordinate monitoring results and then have that information delivered to the Government Management Accountability and Performance managers who are concerned with effectiveness monitoring. He observed that the Puget Sound Ambient Monitoring Program did not make that link. He expressed concern that an additional three months of analysis of the governance question that has already been covered by the Monitoring Consortium will not help. He argued that there is a need to launch the monitoring program and then have a 3- or 5-year independent performance review to check on implementation success.

Gerry O'Keefe, ECB Member and Acting Director, Puget Sound Partnership: Stated that there is a good faith commitment by the Puget Sound Partnership to head towards an independent review. He concluded that delay is not our friend in this situation.

Jeanne Burbidge, ECB member and City of Federal Way Council Member: Noted that there is additional monitoring being done and that establishing consistency is good. She expressed concern that funding has not been addressed and asked if entities will be required to pay for monitoring.

END

[i] The Puget Sound Monitoring Consortium was a diverse group of stakeholders representing approximately 40 local, state, federal, tribal, private and non-profit entities. They provided recommendations for forming an integrated, coordinated monitoring and assessment program for the Puget Sound basin. See their summary report at, http://www.ecy.wa.gov/programs/wq/psmonitoring.

Launch Committee for the
Puget Sound Coordinated Ecosystem Monitoring and Assessment Program

February 11, 2011

Leadership Council
Puget Sound Partnership
326 East D St.
Tacoma, WA 98421

Dear members of the Leadership Council,

On behalf of the members of the Launch Committee, we are pleased to present a draft Charter for the Puget Sound Coordinated Ecosystem Monitoring and Assessment Program (Program), along with recommendations for forming a Steering Committee for the Program. At their meeting in July 2010, the Leadership Council specifically asked the Launch Committee to "recommend a charter by January 2011 based on the essential functions put forth by the Monitoring Consortium in 2008 including: accountability, transparency, science-policy linkages, involvement of all interested and affected parties, strategic approaches including Partnership indicators, stable funding, institutionalized relationships, and regulatory requirements" (July 2010 staff memo to the Leadership Council).

The Launch Committee is a multi-stakeholder group staffed by the Puget Sound Partnership. Members (Table 1) collectively offer multiple perspectives in terms of disciplines and organizations, are experts and community leaders that work at the science-policy interface, and are well grounded in monitoring challenges and issues.

Our process has been very collaborative with meetings open to the public and all meeting materials available throughout the months on our website. As part of our process, the Launch Committee circulated the draft Charter to over 300 stakeholders and partners asking for feedback. We received 23 responses from 22 organizations. The range, quality and depth of the feedback are a testament to the broad and keen interest in the success of this program. The Ecosystem Coordination Board also had the opportunity to give feedback on the charter at their February 3rd meeting. A summary of their discussion is attached to the February 2011 memo provided by Puget Sound Partnership staff.

Charter
The draft Charter describes a program intended to coordinate and facilitate the work of existing and future monitoring efforts in a manner that supports the goals of the Puget Sound Partnership and the many organizations and entities at all levels that are committed to improving the health of Puget Sound.

We have worked very hard to attend to concerns of committee members particularly about transparency, credibility, efficiency, and science-policy linkages. The mechanisms built in the charter to address these essential characteristics include:

1. An independent, multistakeholder, collaborative Steering Committee staffed by Puget Sound Partnership employees.
2. A Steering Committee that oversees development and implementation of the program, including commissioning and overseeing multi-stakeholder topical work groups.
3. A Steering Committee that shapes priorities for monitoring. Monitoring priorities and findings will be integrated in the Action Agenda, the Strategic Science Plan, the Biennial Science Work Plan and the State of the Sound report.
4. The Science Panel acting as a review and advisory body.
5. A program that coordinates monitoring at all levels of activities. The program is not a centralized system of managing all monitoring programs in the region. Data collection, analyses and management will still be deployed across a variety of monitoring entities but the intent is to better coordinate efforts. The Puget Sound Partnership will compile, synthesize and analyze information from different sources to report monitoring program findings at the Puget Sound scale to fulfill their mandate.
6. A third party, objective and independent review every four years to ensure that monitoring findings are credible, independent, effective, open and transparent, legitimate, and salient.

Steering Committee

The Launch Committee recommends that the Puget Sound Partnership form a Steering Committee without delay. We recommend that the Steering Committee be an inclusive group with broad representation of tribes (3), environmental organizations (2), businesses (2), local jurisdictions (4), state agencies (4), federal agencies (3), watershed-based groups (1), Lead Integrating Organizations (2), academia (1), and citizen-science organizations (1). We believe that the various caucuses and associations should be empowered to appoint members upon invitation from the Puget Sound Partnership. Please refer to our recommendations for more detail the criteria, membership and appointing process.

The Charter offers a framework for the Program, but we want to be clear that it is not a work plan. As the Program continues to develop, we recommend that priorities should be placed on commissioning topical work groups and discussions about strategies for acquiring long-term funding for monitoring; better defining the link between the monitoring program and performance management at the Puget Sound Partnership particularly with respect to implementation, effectiveness, status and trends monitoring; and how best to integrate and coordinate the work of existing monitoring efforts like the salmon recovery adaptive management and monitoring program and the Puget Sound Assessment and Monitoring Program (PSAMP).

The committee has one more meeting left before they sunset where they will finalize the Charter based on input received at the Leadership Council.

Feel free to contact us at 360.407.6699 or Robert.Duff@ecy.wa.gov, or 206.543.9152 or newton@apl.washington.edu.

Sincerely,

Robert M. Duff, Chair
Launch Committee
Washington State Department of Ecology

Jan Newton, Vice-Chair
Launch Committee
University of Washington

Enclosures

Launch Committee for the
Puget Sound Coordinated Ecosystem Monitoring and Assessment Program

Table 1. Launch Committee for the Coordinated Ecosystem Monitoring and Assessment program in Puget Sound.

Organization type	Organization	Name	Title
Local	King County	Jim Simmonds	Supervisor, Water and Land Resources Division; Chair, Stormwater Work Group
	Seattle City Light	Scott Powell	Strategic Advisor
State	WDFW	Ken Warheit	Chief Scientist, Fish Program
	DNR	Tom Mumford	Aquatic's program senior consulting scientist
	ECY	Rob Duff	Program Manager, Environmental Assessment
	Puget Sound Partnership	Nathalie Hamel	Monitoring Program Manager and staff to Launch Committee
State/federal	Washington Sea Grant	Kate Litle	Citizen Science Coordinator
Federal	EPA	Michael Cox	Toxics Coordinator Puget Sound and Columbia River
	NOAA	Bruce Crawford	Senior Monitoring Coordinator
	USGS	Rick Dinicola	Associate Director Washington Water Science Center
Tribes	NWIFC	Terry Wright	Director, Fishery Programs
	Tulalip Tribes	Terry Williams	Fisheries and Natural Resources commissioner
Environmental organization	People for Puget Sound	Dave Peeler	Director of Programs
Science Panel	University of Washington	Jan Newton	Principal Oceanographer
Monitoring Forum	Puget Sound Partnership	Bill Wilkerson	Chair. Also, Leadership Council member
Business	Stoel Rives LLP	Lincoln Loehr	Environmental Compliance Analyst
Watershed	Hood Canal Coordinating Council	Richard Brocksmith	Director for Habitat Programs

From: "Jan Newton, Ph.D." <newton@apl.washington.edu>
Date: Mon, 14 Feb 2011 10:00:18 -0800
To: Nathalie Hamel <nathalie.hamel@psp.wa.gov>
Cc: "Duff, Rob (ECY)" <rduf461@ECY.WA.GOV>
Subject: Re: Draft cover letter

Nathalie and Rob,
Sorry to be out of town but this email conveys my support for the submission of this letter to the PSP Leadership Council, as a cover letter for the work of our Launch Committee.
best,
Jan

PUGET SOUND COORDINATED ECOSYSTEM MONITORING AND ASSESSMENT PROGRAM

DRAFT CHARTER

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Introduction

This charter establishes the basic framework for a coordinated ecosystem monitoring and assessment program that is intended to serve the needs of the Puget Sound Partnership and the many organizations and entities across the Puget Sound basin that are committed to helping the Partnership - through their individual and collective actions - achieve the goal of restoring and protecting the health of Puget Sound.

The charter outlines a collaborative, inclusive, and transparent approach to monitoring and assessment that would build upon the many individual and local monitoring programs already in existence. In so doing, the charter recognizes that our collective goals for restoring and protecting Puget Sound will require a deliberate effort to coordinate these programs to address regional and ecosystem needs in a way that has rarely been done before. By necessity, this charter represents a starting point – it is anticipated and expected that elements of the monitoring and assessment program will need to develop and evolve over time, and that the various organizational components of the monitoring and assessment program must remain correspondingly flexible and responsive.

Problem Statement

In 2007, the Washington Legislature (RCW 90.71.200) found that:

"(a) Puget Sound, including Hood Canal, and the waters that flow to it are a national treasure and a unique resource. Residents enjoy a way of life centered

around these waters that depends upon clean and healthy marine and freshwater resources."

"(b) Puget Sound is in serious decline, and Hood Canal is in a serious crisis. This decline is indicated by loss of and damage to critical habit, rapid decline in species populations, increases in aquatic nuisance species, numerous toxics contaminated sites, urbanization and attendant storm water drainage, closure of beaches to shellfish harvest due to disease risks, low-dissolved oxygen levels causing death of marine life, and other phenomena. If left unchecked, these conditions will worsen."

"(c) Puget Sound must be restored and protected in a more coherent and effective manner. The current system is highly fragmented. Immediate and concerted action is necessary by all levels of government working with the public, nongovernmental organizations, and the private sector to ensure a thriving natural system that exists in harmony with a vibrant economy."

Under the same authority, the legislature created the Puget Sound Partnership with the goal of restoring Puget Sound to health by 2020, and authorized the implementation and coordination of a Puget Sound assessment and monitoring program to support that effort.

Many well-designed and executed monitoring programs currently operate throughout the Puget Sound region. While they collectively represent a significant monitoring effort, almost all of these programs were designed to satisfy individual agency mandates (e.g. specific permit requirements) or are primarily intended to support local management decisions (e.g. closing beaches for public health reasons). Further complicating the issue, different agencies have met their requirements in different ways, over different periods of time, and at different funding levels. With little or no coordination occurring, the result is (at best) a fragmented regional monitoring program and a non-uniform understanding of the Puget Sound ecosystem as a whole (PSP Strategic Science Plan 2010).

This un-coordinated approach to monitoring and assessment is generally inefficient (there may be occasional duplication of effort – along with significant data gaps, incompatible protocols and data management systems, and other impediments to sharing or combining important datasets). This often translates into collectively higher costs (e.g. when basic monitoring plans, data management systems, reports, protocols, quality assurance plans, and similar fundamentals are re-created multiple times by numerous individual monitoring entities). And when basic monitoring designs, protocols, and data management systems are not coordinated, it greatly increases the difficulty (and expense) of rolling-up information at the regional (or even watershed) scale.

The importance of rolling-up and combining environmental data (and assessments) across multiple geographic and political scales is greater now than ever before. With the adoption of the Partnership's Action Agenda, and the state's regional approach to salmon recovery, there is a critical need for relevant, timely, reliable information that can feed into key regional and local decision-making and "adaptive management" processes. To the extent that current monitoring programs are often incompatible and frequently "stove-piped" (isolated by entity or topic area) it impedes our ability to support a regional, ecosystem-based conservation and management strategy. To successfully restore Puget Sound, we need a coordinated, regional monitoring and assessment program that can determine the status (and trends) of key ecosystem indicators and measures, determine the effectiveness of our management actions, understand whether or not (and how) those actions truly improve ecosystem health, and continue to track compliance with established standards, rules, and requirements.

Purpose

The purpose of the Puget Sound Coordinated Ecosystem Monitoring and Assessment Program is to support the goals of the Puget Sound Partnership and the many organizations and entities at all levels committed to helping the Partnership.

The state's goals to restore and protect Puget Sound are ambitious (RCW 90.71.300) and will require an effective and efficient monitoring and assessment program. The monitoring and assessment program is intended to facilitate and coordinate the work of existing and future monitoring and assessment efforts, and must be able to describe the status of the ecosystem, assess the effectiveness of our restoration and protection actions, evaluate progress towards ecosystem recovery, and support adaptive management processes and decision-making at many scales.

To be successful, the monitoring and assessment program must meet local and agency-specific mandates while efficiently addressing regional and ecosystem-scale questions and meeting the goals of the Action Agenda. The monitoring and assessment program must provide easily accessible and objective information, and ensure the production, synthesis, and integration of results and communicate findings transparently and effectively to the public.

The monitoring and assessment program will inform policy choices, balance needs among ecosystem components, address issues of geospatial scale, facilitate coordination among existing monitoring and assessment efforts, and incorporate high standards for experimental design, statistical power, and support for indicator tracking. Monitoring must be designed with different uses in mind, such as status and trends, and effectiveness

of restoration and protection actions. The program must also closely coordinate with research and modeling efforts so that monitoring strategies use the best technologies available for accurate assessments, and so monitoring supports (and is guided by) modeling efforts (Strategic Science Plan 2010)

Background

Natural and social science information has given us a base understanding of how Puget Sound and its surrounding watersheds and communities work as a system. From this understanding, we have generated hypotheses about the state of Puget Sound and the actions needed to restore the system to a healthy, self-sustaining condition. In response, diverse actions, as compiled in the Action Agenda, are being implemented to achieve recovery.

Achieving a healthy Puget Sound requires a dynamic and transparent interface between structured information and the actions of many individuals and entities. Monitoring, coupled with the assessment of the monitoring results, are necessary means by which to obtain the structured information needed to evaluate the effectiveness of the investments for restoring the health of Puget Sound, inform ecosystem recovery and adapt management activities over time.

The Puget Sound Partnership has adopted an adaptive management approach to improve recovery actions over time. Adaptive management is defined in RCW 77.85.010 as the "Reliance on scientific methods to test the results of actions taken so that the management and related policy can be changed promptly and appropriately". As stated in the Puget Sound Partnership Strategic Science Plan, "adaptive management allows ecosystem recovery efforts to move forward in the face of uncertainty by ensuring that actions are evaluated against goals and where necessary, altered to optimize outcomes". The Science Panel endorsed an adaptive management approach, and PSP adopted the use of the Open Standards for the Practice of Conservation (Conservation Measures Partnership, 2007) as the framework for implementing the adaptive management cycle (Puget Sound Partnership 2010; Fig. 1). Planning and implementation of monitoring is a critical step in the adaptive management cycle (Conservation Measures Partnership 2007; Fig. 1). Therefore, a well-designed monitoring and assessment program informs and responds to policy decisions, management actions and scientific needs such that individual choices and management, policy and scientific decisions improve over time, ultimately leading to ecosystem recovery.

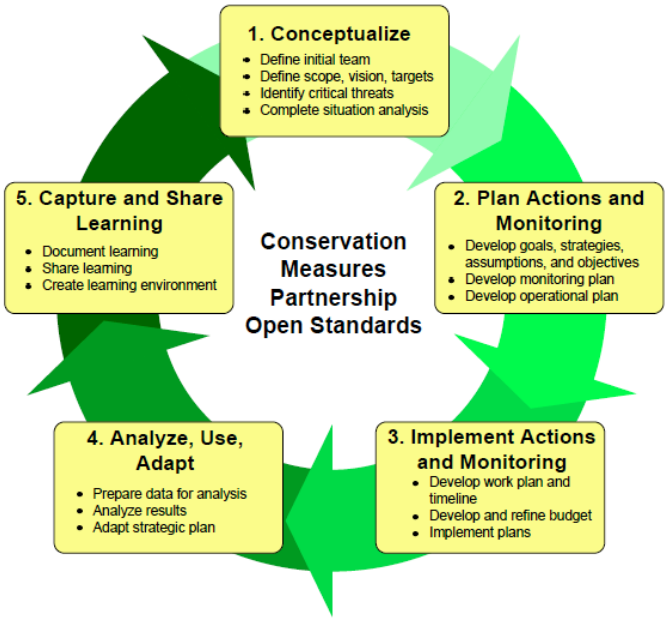

Fig. 1 Adaptive management cycle as described in the Open Standards for the Practice of Conservation (Conservation Measures Partnership 2007).

A variety of monitoring and assessment programs already exist in the Puget Sound region. The Monitoring Program must build on existing efforts to improve monitoring of the health of Puget Sound and recovery efforts. In 2007, the Washington State Legislature recognized the need for a coordinated and integrated monitoring program to inform Puget Sound recovery efforts. The Legislature allocated resources to the Department of Ecology to begin the discussion on creating such a program, which led to the creation of the Monitoring Consortium and recommendations to the Legislature in 2008 on governance (Monitoring Consortium 2008).

In addition, the 2010 Puget Sound Partnership's Strategic Science Plan recognizes the importance of a coordinated and integrated monitoring program by stating:

> " …Although it requires long-term stable funding to achieve, without monitoring, there can be no performance accountability, and the opportunities to make improvements in ecosystem recovery are constrained. Because of its critical importance, the Partnership will develop and implement a coordinated regional monitoring program…."

The Puget Sound Assessment and Monitoring Program (PSAMP) is a foundational monitoring program in Puget Sound that has improved communication among agency and academic organizations and increased coordination of monitoring. PSAMP is an interagency partnership formed in 1988 to assess the condition of Puget Sound and its

resources. Although PSAMP has been successful in assessing the cumulative outcome of collective management actions and has been reporting baseline information on various indicators of the health of Puget Sound, areas for improvement have been identified such as conducting effectiveness monitoring and strengthening ties to specific management questions and key external entities and processes (Puget Sound Assessment and Monitoring Program Steering Committee and Management Committee 2008). PSAMP and other monitoring at all levels of government, tribes, business, academia and citizen-science organizations exist throughout the Puget Sound region and should be considered as building blocks for a coordinated and integrated monitoring and assessment program (e.g., the Stormwater Work Group, the Puget Sound Salmon Recovery Monitoring and Adaptive Management Program and others).

The Puget Sound Partnership is charged with developing and implementing "a coordinated regional program for monitoring ecosystem status and trends, program and project effectiveness, and cause-and-effect relationships." (Action Agenda Near-Term Action E.3.2). The Puget Sound Partnership is also mandated to develop a performance management system "to improve accountability for ecosystem outcomes, on-the-ground results, and implementation of actions." Therefore, a variety of monitoring results will be integrated in the Performance Management System at the Puget Sound Partnership.

Goals

1. **Work in a collaborative, transparent fashion with all monitoring partners to improve monitoring efficiency and effectiveness for all participants, and to better coordinate and integrate monitoring programs (existing and new) across Puget Sound and the rest of the Salish Sea.**
    a. Strategically build on existing monitoring efforts currently implemented by various levels of government, tribes, business, academia and citizen-science organizations throughout the Puget Sound region to achieve our goals.
    b. Ensure that monitoring results contribute to local, watershed, regional (Puget Sound), statewide, Pacific Northwest, and national assessments to the extent possible.
    c. Build consensus on who should monitor what, when, and where (and how) and provide recommendations for determining the highest monitoring priorities.
    d. Ensure coordination and cross-topic synthesis of monitoring conducted in support of existing management actions and policies, such as the Clean Water Act, Endangered Species Act, Shoreline Management Act and Growth Management Act.

2. **Ensure monitoring and assessment of key indicators in Puget Sound as critical elements of decision-making through adaptive management.**
    a. Ensure data collection, analysis, management and reporting of priority indicators for ecosystem, human health and well-being, programmatic components, threat reduction and strategy effectiveness.
    b. Develop monitoring and assessments necessary to evaluate whether the recovery actions, as prescribed in the Action Agenda, are meeting the six recovery goals stated in RCW 90.71 (water quality, water quantity, species and food webs, habitats, human health and well being).
    c. Establish new and assess existing monitoring to determine the effectiveness of recovery actions, evaluate progress towards ecosystem recovery and inform decision-making through adaptive management to achieve the goals of the Action Agenda.
    d. Ensure linkages between implementation, compliance, effectiveness and status/trends monitoring.
3. **Ensure data are credible, trusted, and available with known precision, accuracy, and certainty.**
    a. Increase accessibility to data and improve coordination of data collection, data management, analysis and reporting among monitoring entities to reduce duplication of effort, while recognizing individual monitoring requirements and mandates.
    b. Promote development and implementation of standardized protocols and methodologies to better integrate data across various scales, participants, and geographic regions.
    c. Implement a credible and appropriate QA/QC and Peer Review program to help guide monitoring designs, implementation, and reporting.

4. **Ensure findings are easily discoverable, available, and communicated to a broad audience including the scientific, management and policy communities, decision-makers, tribes and the public.**
    a. Compile, synthesize and communicate monitoring and assessment findings that interpret the data in an unbiased fashion ("tell the story") about Puget Sound including the funding needed to conduct the ongoing monitoring.
    b. Ensure that results and findings from the monitoring program are reported in the State of the Sound report and used as a basis for updating the Puget Sound Partnership Biennial Science Work Plan and Action Agenda.

Roles, Responsibilities and Relationships

Program Structure

The monitoring and assessment program envisioned in this Charter will comprise a set of topic-specific and cross-topic work groups, directed by an independent Steering Committee. The Steering Committee is the primary decision-making body for the monitoring and assessment program and will develop recommendations for monitoring entities and the Partnership with regard to the coordination and implementation of the regional monitoring and assessment program.

Several advisory or support groups that are already established will provide recommendations and feedback to the Steering Committee (including the Science Panel, Ecosystem Coordination Board, and Leadership Council). PSP staff will provide support to the Steering Committee and work groups. Some work groups are expected to be permanent. Other work-groups may be formed to work on specific questions or integration issues as directed by the Steering Committee. The participation of various programs housed at monitoring entities is also anticipated.

The Monitoring Program structure engages multiple partners and stakeholders at technical, scientific and policy levels within a fairly simple decision-making structure (Fig. 2). The Monitoring Program is overseen by the Steering Committee. The Steering Committee informs, and in return receives guidance and recommendations from, the Science Panel (especially) as well as the ecosystem coordination board and ultimately the leadership council. Technical information, monitoring results, insight on local capacity and requirements, and implementation advice flows up from the Work Groups for discussion with the Steering Committee. Puget Sound Partnership staff support the Steering Committee and work groups, as well as the other advisory bodies.

Fig. 2. Structure of the Puget Sound Coordinated Ecosystem Monitoring and Assessment Program depicting the program components and their relationships.

The descriptions below summarize the general roles and composition of each program component. For a more detailed description of the roles and responsibilities of each program component recommended by the Launch Committee, please see Appendix 1.

Summary of Roles for the Program Components

Steering Committee

Role: The Steering Committee is the primary decision-making body that will oversee and guide the development and implementation of the regional Monitoring Program. The Steering Committee will provide direction to the Work Groups especially with regard to regional information needs, questions, and priorities for monitoring and assessment. It is ultimately accountable for decisions affecting the regional monitoring and assessment program. The Steering Committee will identify and commission the Work Groups and ensure coordination of Work Group activities and integration across topics (some work

groups are expected to be permanent, while others may be convened for a limited duration in order to address a particular cross-topic question or topic of interest).

In making its decisions and recommendations, the Steering Committee will seek and consider input from the Science Panel (especially) and Ecosystem Coordination Board, as well as from the Work Groups. The Steering Committee may direct and approve monitoring and assessment work plans, propose monitoring plan changes, approve quality assurance plans, direct or coordinate data synthesis and inter-disciplinary approaches, integrate information and recommendations from the workgroups, commission or recommend data analyses and assessment, and direct other strategic or technical work as needed and appropriate. The Steering Committee may review and recommend funding needs and priorities to support the regional monitoring and assessment program, and lead or assist in the development of a regional monitoring and assessment funding strategy.

The Steering Committee will approve and adopt this charter, including any bylaws, revisions, or updates as/when needed.

Composition: The Steering Committee includes at least these entities: state agencies; federal agencies; local governments; tribes; environmental organizations; businesses; and research institutions. The representatives on the Steering Committee are people with scientific and environmental policy backgrounds and practical experience in specific topic areas. In general, it is anticipated that the Steering Committee will be representative of the monitoring entities comprising the technical Work Groups (but may include other interested organizations as well). The Puget Sound Partnership will provide staff support for the Steering Committee to facilitate and assist its initiatives and efforts. However, the decision-making authority for the coordinated monitoring program will reside with the Committee.

Work Groups

Role: The Work Groups are a key element of the Program and provide the primary venue (forum) to assemble the many entities from across Puget Sound that are responsible for and involved with monitoring particular media, topics, or ecosystem components/attributes. Through collaboration, and with support from PSP staff and others, the work groups are primarily charged with coordinating their collective monitoring efforts to:

1. maximize the overall efficiency and effectiveness of monitoring across the Sound
2. support the participating organizations' individual and independent needs for monitoring, and

3. plan for and contribute to meeting the larger regional information needs of the Partnership, state and federal action agencies, and others.

The Work Groups will serve as the expert (technical) forums necessary to evaluate and recommend monitoring for their specific topics including where (and how) data should be collected, managed, and assessed. They will help develop monitoring questions and hypotheses within topics, and will contribute data assessments, technical analyses (including capacity requirements), and other support in response to Steering Committee (or Science Panel) recommendations and guidance. Work Groups will also be key in assuring that the necessary data and assessments exist to track the success (and provide accountability for) the Puget Sound ecosystem recovery effort.

Work Groups members will be asked to contribute data and assessments that can be rolled-up at the regional scale and used for the Partnership's dashboard indictors and/or to address requirements of the Action Agenda, while being cognizant of the continuing need to support the individual mandates and independent authorities of the contributing member organizations. Through a chair or other designee, they will coordinate with other work groups or monitoring entities to ensure that their efforts support and complement other topic areas, and to address cross-topic (integrated) questions, information needs, assessments, or hypotheses articulated by the Steering Committee, Science Panel, or others. Some Work Groups already exist (and are funded) and should be built upon, but some new groups will need to be established.

Composition: The Work Groups include representatives of state, local, and federal agencies, tribes, business, environmental groups, universities and other research institutions, and other key stakeholders that conduct monitoring and assessment activities in the Puget Sound (i.e. – the monitoring entities). Typically, work group members will be technical experts in those topic areas. The Steering Committee is responsible for identifying and commissioning Work Groups. Work Groups may have a chair and vice-chair selected by the Work Group members, and may develop bylaws as (if) needed.

Monitoring Entities

Role: The monitoring entities are responsible for collecting, managing, analyzing, and reporting data for their organizations. Technical experts representing the monitoring entities will largely make up the topical Work Groups. The monitoring and assessment program is intended to add value to the efforts of individual monitoring entities, through coordination and collaboration among related programs, facilitating standardization of methods, approaches, and data management strategies, leveraging regional resources in support of the Action Agenda, and other efficiencies. In turn, the monitoring entities will contribute data and results to be incorporated in regional assessments, Partnership

reports, and other documents. Where new monitoring programs are needed or recommended, these will generally be planned and implemented through coordination and agreement with the appropriate monitoring entities.

Composition: The monitoring entities include organizations actually involved in monitoring and assessing the Puget Sound ecosystem at all levels of government, tribes, business, academia and citizen-science organizations.

Puget Sound Partnership Staff

Role: The Partnership will provide monitoring and assessment program staff to support the Steering Committee and Work Groups including their initiatives and efforts. PSP monitoring and assessment program staff will help facilitate, convene, coordinate and monitor the progress of Work Groups and the Steering committee, and assist in updating and informing the various bodies and advisory panels of decisions and issues of concern. PSP staff will also facilitate and ensure the compilation, management, analysis, assessment, interpretation, and reporting of regional and ecosystem-scale data and information. PSP staff will also assure that data used for regional reporting are available to any entity which wishes to independently analyze the same data. PSP staff will work with staff from individual monitoring entities and elsewhere, and will coordinate with the Steering Committee, Work Groups, and Monitoring Entities to compile and evaluate data, develop results, facilitate peer review, and provide data and results to be included in the State of the Sound report and the Puget Sound Update. PSP staff will also facilitate the integration of monitoring and assessment program findings into the performance management system.

Composition: The Partnership has a monitoring and assessment program manager and staff who provide support to all levels of the monitoring and assessment program. Other Puget Sound Partnership staff including the Science Program Director, Technical Program Manager, Chief Information Officer, Performance Manager and technical staff are anticipated to support the Monitoring Program as needed.

Science Panel

Role: The Science Panel is responsible for reviewing the monitoring and assessment program for consistency with the Biennial Science Work Plan, the Action Agenda, and sound scientific principles. It provides advice and recommendations to the Steering Committee to ensure a solid scientific foundation for the program, including recommendations for appropriate independent (3rd party) review of the program and peer review of its products. The Science Panel can also be particularly helpful in clarifying

and articulating for the Steering Committee the specific questions, indicators, or hypotheses on which the monitoring and assessment program should focus.

Composition: The Science Panel is appointed by the Leadership Council and is composed of nine scientists. The Science Panel's general role is to provide the Leadership Council with independent scientific advice and peer review of the Action Agenda, Monitoring Program, and indicators.

Advisory Boards

Ecosystem Coordination Board

Role: The Ecosystem Coordination Board provides a linkage to a broad array of stakeholders and their interests. Their main role is to advise the Leadership Council, be its eyes and ears on citizen concerns, and provide outreach and education on the Action Agenda. The ECB is informed of issues and decisions related to the monitoring program, and can provide important advice to the Steering Committee with regard to regional and local perspectives on monitoring and adaptive management.

Composition: The Ecosystem Coordination Board is composed of 27 members representing different interests around the Puget Sound region and is appointed by the Leadership Council. The ECB represents both the local action areas and region-wide interests, and therefore is a key link between local and regional concerns.

Leadership Council

Composition: The Leadership Council has seven members and is appointed by the Governor. The Leadership Council is the governing body of the Puget Sound Partnership.

Role: The Leadership Council provides the overall direction for the monitoring and assessment program by virtue of establishing the goals, objectives, and strategies for the Puget Sound Partnership to successfully implement the Action Agenda. The Leadership Council also approves the governance framework of the monitoring and assessment program.

Data Management and Access

A key objective of the monitoring and assessment program is to collect, combine, evaluate, and share data from multiple contributing partners and sources. The program's approach to data management should serve to unite information and data from multiple

sources to better answer questions and support decision making at all scales (local, watershed, regional, and even statewide). To accomplish this, data must be:

1) Accessible (allow for easy discovery and be equally accessible to all interested parties – including outside researchers and the public).
2) Comparable (indicators and metrics to be measured must be clearly defined and measured using comparable protocols and methods)
3) Shareable (data must be transferable between different organizations and data management systems).

Large, multi-agency monitoring programs are often challenged by incompatibility among data management systems. This is a typical outcome of numerous agencies having developed a variety of individual data management systems over many years – each designed to meet a specific program need, set of mandates, or funding proviso – and each designed for individual efficiency and developed using whatever information technology or software was current at the time.

The key steps to development of an integrated, robust, flexible, and collaborative data management system are outlined in the Puget Sound Strategic Science Plan (Puget Sound Partnership 2010; Section 4.3.3). The Strategic Science Plan envisions a data architecture that provides discovery, access, and visualization of data across a network of distributed data management systems maintained by individual monitoring partners. Many organizations involved in Puget Sound have made substantial investments in data collection and information systems to support their needs. The Strategic Science Plan recommends that the monitoring and assessment program takes advantage of, but enhances the connectivity between existing data repositories and clearinghouses already established in the Puget Sound region. From a practical perspective, this means most data will continue to be owned and managed by the organizations that collect it, but with a recognition that the monitoring and assessment program (and all users) benefits by gaining access to those data. Likewise, the data providers themselves benefit as the monitoring and assessment program works to expand their access to comparable or complimentary data sets collected by other agencies and groups.

Therefore, the initial data management goals of the monitoring and assessment program are (1) to assess the compatibility among the data management systems and data repositories currently in use across the Puget Sound basin and to develop and implement a plan for improving their compatibility and connectivity; (2) to facilitate and support the creation, documentation, and use of standard data collection protocols for all facets of field sampling, thereby enhancing the comparable nature of the data; and (3) to develop a data management strategy that assures key information flows (for indicator data and for

data needed by managers, stakeholders, researchers, and the general public) are coordinated, available, and accessible.

Reporting and Communication

Communications and reporting are pivotal functions of the monitoring and assessment program. To support its work, the program relies on resources and information being provided from many different sources. Each of these people and organizations needs a clear understanding of what information is required and how it is used. Also, the program's success will be measured through its ability to support adaptive responses by Puget Sound Partnership leadership and other decision makers. This depends on reporting that is clear, creative, and compelling.

To boost the effectiveness of the monitoring and assessment program, a communications and reporting strategy must address the interface between science and policy. This requires engaging multiple sources of expertise in an integrated and collaborative process. It includes building confidence that the information generated is relevant to decision making, is technically credible, and is not biased by political influence. The strategy should seek to build a common understanding of how science works, what it does best, and what are reasonable expectations as to the certainty of results.

Communications

The implementation of the Action Agenda relies on the participation by many agencies, tribes, individuals, and stakeholder groups. Some actions are mandated specifically in various statutes and programs, but many are voluntary and are less clearly defined. The monitoring and assessment program reflects this diversity of roles, and its success depends on creating a common understanding among participants and motivating them to provide consistent, high-quality information. To accomplish this, the monitoring and assessment Program should make active and continual efforts to enlist participation in the Work Groups and to seek resources for completing the work.

Specifically, the goals of the communication efforts are to:

- Describe the rationale for and components of the monitoring and assessment program.
- Develop a matrix of communication strategies for multiple audiences.
- Define the relationship between the monitoring and assessment program and monitoring efforts conducted by others for individual functions and geographies.
- Demonstrate how monitoring information is used to inform decisions by Puget Sound Partnership leadership and other entities.
- Specify information requirements, protocols, formats, and schedules.

- Articulate the need for funding and other resources to accomplish this work.
- Ensure that data, reports, plans, and other products of the monitoring and assessment program are easily discoverable and accessible to all.

Reporting

Monitoring results will continue to be evaluated and reported by individual monitoring entities as part of their normal activities. PSP staff will frequently depend on those efforts but may also independently compile, assess, synthesize, and report results as a further contribution to the reporting functions of the Partnership, including the Biennial Science Work Plan, the State of the Sound report, the Puget Sound Science Update, and technical conferences like the Salish Sea Conference and South Sound Symposium. The reporting functions of the monitoring and assessment program should:

- Reflect the program's commitment to quality assurance and peer review of science products.
- Report accurate information in appropriate formats; assemble results of analysis and evaluation; and articulate the degree of confidence and consensus around monitoring outcomes.
- Develop conceptual models and content methods to "tell the story" to different audiences; in addition to ecological content, address process issues such as accuracy, certainty, significance, risk, and cost/benefit.
- Coordinate and integrate reporting by multiple participating organizations and entities.
- Provide information and analysis in ways that support decision-making and inform the general public.
- Frame decision points and next steps to help prioritize and motivate future actions.

Peer Review

An objective, independent review process will help ensure that monitoring findings are credible, independent, effective, open and transparent, legitimate, and salient. Peer review is a fundamental tenet of good science (Biennial Science Work Plan 2010) and is recognized by many tribal, local, state, and federal agencies as an essential component of any monitoring program (e.g., Peer Review Advisory Group for EPA's Science Policy Council 2006; Van Cleve et al. 2004; WAC 365-195-900; Puget Sound Water Quality Authority 1995; Puget Sound Assessment and Monitoring Program Steering Committee and Management Committee 2008; Puget Sound Partnership 2010).

The Steering Committee, in consultation with the Science Panel and the Leadership Council, will develop guidelines for, and every 4 years seek, an independent, 3rd party review of the entire monitoring and assessment program, including:

1. Monitoring program functions and processes.
2. Questions being asked.
3. Methods proposed to answer the questions.
4. Results and conclusions.
5. The application of the results to the adaptive management plan.
6. The framework and strategies used for achieving the results.

In addition to seeking periodic programmatic reviews, the Steering Committee will also provide recommendations to ensure a credible peer review process for all publications, monitoring designs, reports, and other products emerging from the monitoring program. (The Steering Committee should also assure the public availability of all such documents) In many cases, monitoring entities already have their own, established peer review processes. The Steering Committee may review those processes to assure program-wide transparency and credibility.

Quality Assurance/Quality Control (QA/QC)

A good QA/QC program is essential to ensure that data are of an acceptable level of quality and the level of quality is well documented. Guidance for quality assurance and quality control are widely available (e.g., Puget Sound Water Quality Authority 1988; Puget Sound Assessment and Monitoring Program Steering Committee and Management Committee 2008; Puget Sound Stormwater Work Group 2010; USA EPA 2008). A QA/QC plan should be developed and implemented for all those contributing data consistent with accepted state and federal guidelines and requirements.

It is cost effective to implement a stringent and rigorous quality assurance quality control process within the monitoring and assessment program. It will make any discussion or controversy focus on the interpretations, not the science and facts. Such a process will make for a more efficient and faster adaptive management cycle. The measures will build trust amongst stakeholders and agencies. It will reduce uncertainty about decisions, and improve decision-making and decisions over time.

Funding

The coordination, administration, and scientific success of the monitoring and assessment program will depend on acquiring long-term, stable funding. However, funding for the program will be complex because a wide spectrum of monitoring entities are anticipated to participate in the Program. Collectively, these entities are expected to implement a

large number of functions and activities (Appendix 1). It is essential to factor in the costs of monitoring and assessing the effectiveness of recovery actions whenever planning studies, projects, or strategies r to improve the health of Puget Sound. Careful planning, strategic monitoring, coordination, and sharing of information can reduce the overall costs of monitoring.

The Work Groups will recommend what, when and where to monitor to the Steering Committee, as well as estimate costs and provide ideas for strategies to fund monitoring functions and activities. The Steering Committee will evaluate the needs, priorities, and strategies for funding, and recommend how to distribute available funding. As the monitoring and assessment program evolves, strategies commensurate with the program functions and activities will need to be developed through the Steering Committee, the Science Panel and the Leadership Council. In general, the Steering Committee is expected to develop funding recommendations (priorities, gaps, etc.) for presentation to the Leadership Council and Executive Director of the Partnership

Glossary

Compliance monitoring: Monitoring to ensure that the outputs meet the standards as required in the plan, or to comply with contractual or legal requirements For example a culvert is replaced in a habitat restoration project. Did the culvert comply with the size, slope, and drop required in the approved specifications and permits?

Components (according to Open Standards): The goals, objectives, strategies, and assumptions that form the Action Plan.

Conservation Target: A limited suite of species, communities, and ecological systems that are chosen to represent and encompass the full array of biodiversity found in a project area. An example for Puget Sound is Chinook Salmon.

Dashboard Indicators: The Puget Sound Partnership environmental dashboard indicators include: Annual wild harvest of tribal and non-tribal commercial fisheries; percent of core beaches meeting water quality standards; number of acres of shellfish beds impacted by degraded water quality; number of recreational fishing licenses sold annually; marine water quality index; freshwater quality index; percent of monitored stream flows below critical levels; wild Chinook population abundance; southern resident killer whale population trends; Pacific herring spawning biomass; terrestrial birds; percent of marine and freshwater shorelines armored; areal extent of eelgrass; toxic levels in fish; level of toxics in marine sediments; changes in land use and land cover by type.

Effectiveness Monitoring: Determines whether a management action has been effective in addressing a threat to the environment. Depending upon the action taken, monitoring can be extensive or minimal. Action effectiveness monitoring has been tied to such threats as habitat restoration and enhancement, changes to hatchery operations, pollution

discharge elimination systems, and harvest constraints. Proper action effectiveness monitoring is characterized by a before and after treatment design. Examples of ongoing action effectiveness monitoring include: Habitat Conservation Plans developed for private timberlands under the Forest and Fish Agreement, total maximum daily loading (TMDL) monitoring required under the Clean Water Act; Salmon Recovery Funding Board monitoring of habitat restoration projects, and harvest and hatchery monitoring required under the Endangered Species Act. Action effectiveness monitoring answers the question: Did the management action have the intended output being targeted?

Evaluation – An assessment of a project or program in relation to its own previously stated goals and objectives.

Implementation monitoring: Monitoring to ensure that the project is implemented as per plan and schedule.

Key Ecological Attributes (according to Open Standards): An aspect of a conservation target's biology or ecology that if present, defines a healthy conservation target and if missing or altered would lead to the outright loss or extreme degradation of that conservation target over time.

Logic model/Results chains: Logical Framework – Often abbreviated as logframe. A matrix that results from a logical framework analysis that is used to display a project's goals, objectives, and indicators in tabular form, showing the logic of the project.

Monitoring: (3 definitions)

a) Refers to the systematic process of collecting and storing data related to particular natural and human systems at specific locations and times (Busch and Trexler 2003).

b) The periodic collection and evaluation of data relative to stated project goals and objectives. Many people often also refer to this process as monitoring and evaluation (Conservation Measures Partnership 2007).

c) A range of activities needed to provide management information about environmental conditions or contaminants. Depending on the requirements of any particular situation, these activities could include conceptual and numerical modeling, laboratory and field research, preliminary or scoping studies, time-series measurements, data analysis, synthesis, and interpretation. A monitoring system is integrated and coordinated with the specified goal of producing predefined management information; it is the sensory component of environmental management (NRC 1990).

Monitoring entity: A federal, state, or local agency, tribe, non-government organization or volunteer group conducting systematic monitoring of an ecological or human attribute.

Open Standards: "Open Standards are common concepts, approaches, and terminology in conservation project design, management, and monitoring in order to help practitioners improve the practice of conservation. In particular, these standards are meant to provide the steps and guidance necessary for the successful implementation of conservation projects, and are developed through public collaboration, freely available to anyone, and not the property of anyone or any organization and can thus be freely redistributed."

The *Open Standards* five steps that comprise the project management cycle. The steps include:

1. **Conceptualize** what you will achieve in the context of where you are working.
2. **Plan** both your Actions and Monitoring.
3. **Implement** both your Actions and Monitoring.
4. **Analyze** your data to evaluate the effectiveness of your activities. Use your results to adapt your project to maximize impact.
5. **Capture and Share** your results with key external and internal audiences to promote **Learning**.

Peer Input: Recommended changes or additions to a report or monitoring procedure from other independent scientists or experts recognized as competent in their field and who will have the expertise and knowledge necessary recommend those changes.

Peer Review: Formal review of a publication or report by other independent scientists or experts recognized as competent in their field and who will have the expertise and knowledge necessary to determine whether the scientific paper or report has followed the scientific method and has presented clear conclusions based on scientific data provided in the report and having used clear statistical procedures.

Puget Sound interested entity: Any individual, organization or entity that has an interest in the health of Puget Sound and its watersheds.

Quality Assurance: Quality Assurance is about Process. It describes the proactive method of establishing a process that is capable of producing a product or deliverable that is error or defect free. In the world of natural sciences this is seldom possible. However, the level of precision and accuracy should be set, and the methods clearly defined that will provide the greatest confidence in the data.
http://www.modernanalyst.com/Resources/BusinessAnalysisGlossary/tabid/231/Default.aspx#Q

Quality Control: Quality Control is about Products or Deliverables. It describes checking a final product or deliverable to ensure that it is defect or error free and meets specifications. In the natural sciences it entails attempting to measure the precision and accuracy of results with known statistical confidence.
http://www.modernanalyst.com/Resources/BusinessAnalysisGlossary/tabid/231/Default.aspx#Q

Status/Trend Monitoring: Status monitoring characterizes existing environmental conditions. It is a starting point for future comparison of change. It may also act as a reference point for "Desired Future Condition". Trend monitoring involves measurements taken at regular intervals. It describes characteristics of indicators over time. Examples of status/trend monitoring include; water quality, salmon population abundance, flow, habitat characteristics, toxin levels in organisms, etc.

Validation (Cause and Effect) Monitoring: Validation monitoring answers the question: Did the management output or outputs create the intended outcome? This

question often involves evaluating the effects of numerous projects on a watershed or species. An example would be: Has the cumulative effects of habitat restoration actions in a specific river resulted in producing more juvenile salmon that migrate to the sea? Another example: Has the cumulative effects of changes in forest practice rules and methods resulted in improved water quality and instream and riparian habitat on forest lands?

Viability Assessment (according to Open Standards): An analysis of the conservation target to determine the acceptable range of variation and then an evaluation of its current status and its desired future status. The desired future status of all of the attributes of the target becomes the goal for this target.

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Appendix 1

(see next page)

Appendix 1. Draft description of the roles and responsibilities of program components in implementing the functions or activities of the Puget Sound Coordinated Ecosystem Monitoring and Assessment Program. The monitoring functions or activities will be rooted in the adaptive management approach adopted by the Puget Sound Partnership.

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
1	**Indicators and monitoring questions in service to the adaptive management plan, local and agency-specific mandates, and other critical information needs of the Puget Sound Partnership and its contributing partners.** **Regional-scale questions will be in part derived from indicators for ecosystem, human health and well-being (including the Dashboard of Indicators), threat reduction targets, and strategy effectiveness.**	1a, 1b	**Identify** the questions and hypotheses that existing monitoring programs conducted by the entities are attempting to answer. **Work with** PSP to ensure alignment of the PSP, GMAP, and EPA indicators and performance measures.	**Compile and coordinate** inventory of the questions and hypotheses being addressed by monitoring entities. **Propose** high level questions and indicators for Steering Committee consideration; develop more detailed sub-questions or hypotheses which need to be answered to address critical uncertainties.	**Reconcile and integrate** high level monitoring questions from all Work Groups. **Engage** and seek science, policy, and management input from the SP, ECB, and Work Groups. **Decide** final list of high level monitoring questions to be addressed by the program (most of which should be consistent with indicators) and direct Work Groups accordingly.	**Identify** indicators (this is SP role from statute) **Recommend to Steering Committee high level** questions, indicators and targets consistent with the Biennial Science Work Plan, the Strategic Science Plan, the Puget Sound Science Update and relevant to the Action Agenda	**Review** and provide input on proposed indicators, targets, and monitoring questions when appropriate.	**Approve** PSP indicators and targets.	**Support, assist and ensure coordination** between different program components. **Manage** the adaptive management planning and executing process. **Coordinate** development of indicators and targets. Facilitate inter-disciplinary teams and cross-partnership	**Plan Actions and Monitoring**

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
				Help develop and refine operational definitions for indicators (Work Groups will include Indicator Champions).					work groups.	
2	**Inventory of existing monitoring that fulfils the adaptive management plan and identifies important monitoring gaps, uncertainties, data quality issues and research needs**	1b, 1c, 1e, 2a	**Identify** existing monitoring efforts and the questions, indicators, and hypotheses they are intended to answer; **Identify** gaps, uncertainties, data quality issues and research needs.	**Compile** information from monitoring entities. **Evaluate and prioritize** (within topic areas) current monitoring including gaps, uncertainties, data quality issues and research needs taking into account different scales.	**Integrate** input from all Work Groups. **Engage** and seek science, policy, and management input from the SP, ECB, and Work Groups. **Prioritize** current monitoring, gaps, uncertainties, data quality issues and research needs across Work Groups (topic areas) that need to be addressed by program.	**Advise SC** on relative priorities of critical data gaps, uncertainties, data quality issues and research needs. **Recommend** needed research.	No role	No role	**Support, assist and ensure coordination** between different program components.	**Plan Actions and Monitoring**
3	**Priorities for new and existing monitoring that meets the needs of the adaptive management**	1b, 2a, 2b	**Recommend** priorities that address the	**Evaluate** and **prioritize** monitoring and	**Integrate** input from all Work Groups.	**Advise** Steering Committee **on** priorities	**Review** and provide input.	**Review** advice from SP and input	**Support, assist and ensure coordination**	**Plan Actions and Monitoring**

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
	plan, local and agency-specific mandates, and other critical information needs of the Puget Sound Partnership and its contributing partners.		monitoring questions and requirements of the monitoring entities as well as the regional indicators and program needs. .	assessment needs for their topic.	**Engage and seek** science, policy, and management input from the SP, ECB, and Work Groups and make any adjustments to high level priorities. **Evaluate** the monitoring needs and priorities across topic areas. **Decide** on high-level priorities for the monitoring program and **submit** priorities to Science Panel for inclusion in the Biennial Science Plan, Strategic Science Plan and Action Agenda.	consistent with the Biennial Science Work Plan, Strategic Science Plan and the Action Agenda. **Advise** Steering Committee on criteria for prioritization.		from ECB and **provide input** to Steering Committee, when appropriate.	between different program components and ensure consistency with Puget Sound Partnership needs.	
4	**Monitoring plans and work plans (includes monitoring priorities, literature reviews, protocols, study designs, quality assurance plans, implementation plans, etc)**	2b, 3a, 3b	**Develop** monitoring plans, protocols, study designs, QA plans and implementation plans for ongoing and proposed new monitoring that	**Develop topic-based** monitoring plans, protocols, study designs, AQ plans and implementation plans for ongoing and proposed new	**Direct** development of topic-based work plans based on priorities. **Approve** monitoring plans and work plans. Ensure plans are consistent with Biennial	**Review** monitoring plans for consistency with Biennial Science Work Plan, Strategic Science Plan and Action Agenda.	**Provide input** on acceptable levels of certainty vs costs.	**Review** advice from SP and input from ECB and **provide input** to Steering Committee	**Support, assist and ensure coordination** between different program components and ensure	**Plan Actions and Monitoring**

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			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
			addresses agency mandates and needs **Adopt** protocols and QA/QC plans to ensure consistency in data collection, management and analysis across the region and topics	monitoring based on direction from SC. **Coordinate** with monitoring entities and among work groups when developing these products. **Seek** Steering Committee approval	Science Work Plan, Strategic Science Plan and Action Agenda. **Direct** PSP staff to compile and publish all monitoring plans, study designs and protocols across Work Groups. **Seek** input from Science Panel and ECB on acceptable levels of certainty vs. costs.	**Include** (high level?) monitoring plan in the Biennial Science Work Plan. **Advise** Steering Committee on acceptable level of certainty. **Advise** Work Groups on criteria for assessing monitoring designs and QA/QC.		on level of precision and accuracy desired versus costs when appropriate.	consistency with Puget Sound Partnership needs **Compile** and **publish** all monitoring plans, study designs and protocols across Work Groups (on behalf of SC)	
5	**Costs of prioritized monitoring**	1a, 1b, 1c, 1e, 2a, 4a	**Provide** information on costs of monitoring . **Estimate** costs for any new monitoring identified by the	**Compile, estimate** and **review** the costs of existing and new monitoring within their topic and **report** to Steering	**Compile** the cost estimates from all of the Work Groups. **Evaluate** overall costs of implementing the program and prepare	**Review** cost estimates for consistency with the Biennial Science Work Plan and the Action Agenda.	**Informed of** costs and **discuss** interested Puget Sound entities' concerns.	**Informed of costs** and Science Panel ECB input and **discuss** interested	**Support, assist and ensure coordination** between different program components.	**Plan Actions and Monitoring**

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			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
			Steering Committee.	Committee.	budget. **Make recommendations** to PSP for overall priority of current and new funding and possible shifts in funding within existing monitoring. **Recommend** how funds are spent for those funds available directly for the program. **Seek input** from the Leadership Council, Science Panel, ECB and PSP staff.			Puget Sound entities' concerns.	**Review** cost estimates for consistency with Puget Sound Partnership needs and impacts on state and federal budget. **Report** costs as part of the biennial cost estimates to implement Action Agenda. **Oversee** funding expenditure for PSP funds.	
6	**Funding**		**Identify** need to fund monitoring **Propose** funding in annual/biennial	**Identify** need to fund monitoring.	**Identify** need to fund monitoring. **Develop** long-term funding strategy for	**Advocate** for monitoring support to a variety of agencies and	**Advocate** for monitoring support to a variety of	**Advocate** for monitoring support to a variety of agencies and	**Support, assist and coordinate** between different program	

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
			budget requests **Seek** funding		implementing the program.	levels of government (e.g., Congress, legislature, state and federal agencies, tribes, NGOs, businesses)	fund sources and political entities (e.g., watershed, local jurisdictions, legislature, state and federal agencies, tribes, NGOs, businesses)	levels of government (e.g., Congress, legislature, state and federal agencies, tribes, NGOs, businesses) **Approve** Puget Sound Partnership budget	components **Advocate** for monitoring support and highlight that monitoring priorities are consistent with needs identified and agreed to by Puget Sound Partnership **Include** monitoring needs in biennial budget requests **Seek** funding	
7	**Data collection, management, assessment, analysis and interpretion at the topic, local and/or ecosystem level**	1a, 1b, 1c, 1d, 2a, 3a,	**Collect, manage, analyze, assess and interpret** data at all levels, when appropriate and depending on entity	**Determine** what data need to be collected where and how. Ensure roll-up at	**Ensure transparency and accessibility of data.** **Review** and resolve data problems identified by the Work Groups.	Informed **Review and confirm** validity of assumptions and	Informed	Informed Briefed on any problem areas	**Support** and coordinate data management, QA/QC, and analyses	**Analyze, Use, Adapt**

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
		4a, 4b	goals. **Evaluate** data **Support** GMAP performance measures, as part of the Monitoring entities' performance management systems.	regional scales. Submit results to Steering committee with any comments. Compile draft results from each entity for review and discussion. **Synthesize** findings within topic areas.	In coordination with the Science Panel, review and confirm validity of assumptions and interpretation of results. **Review** and ensure robust statistical analyses and that all methods, calculations and interpretations are available and transparent **Ensure** appropriate peer review and QA/QC procedures are implemented **Review** for cross work group linkages. **Commission** Work Groups or contracts for cross-topic synthesis and integration of results across topics.	interpretation of and results			**Conduct** analyses, synthesis and roll-up across scales and topics **Work with** monitoring entities on any questionable results **Conduct** analyses for performance management	

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
					In coordination with the Science Panel**, review and confirm** validity of assumptions and results					
8	**Production of reports and communication of results in context**	2b, 4a, 4b	**Provide results** on a periodic basis to appropriate Work Groups **Collaborate** with PSP staff and Work Groups to communicate results (e.g. State of the Sound report) **Produce and communicate** their own results to their stakeholders	**Compile** results Collaborate with PSP staff and on production and communication	**Vet** materials and recommend to Science panel how they are or should be used by policy groups (Leadership Council and Ecosystem Board) before the policy groups communicate to the Governor, Legislature, Congress, local constituencies or the media **Present reports** to Science Panel Compile a summary report from all Work Groups and provide context Collaborate with PSP staff on production and communication	**Review and endorse reports** Vet materials and recommend how they are or should be used by policy groups (Leadership Council and Ecosystem Board) before the policy groups communicate to the Governor, Legislature, Congress, local constituencies or the media	Informed Comment on reports to Science Panel and Leadership Council Use good, relevant, vetted information, set in context, to communicate with member groups' constituencies	Review reports Use good, relevant, vetted information, set in context, to Inform Governor, Legislature, Congress and media	Communicate ecosystem-level results and local and topic level as needed or appropriate Produce PSP required reports (e.g. State of the Sound) in collaboration with Monitoring Entities, the Work Groups and Technical Committee Communicate indicators and targets and	**Capture and Share Learning**

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
									performance management work processes and deliverables to inform stakeholders, partners and PSP staff Update website Produce Action Agenda, Biennial Science Work Plan and State of the Sound	
9	**Revisit questions, assess data gaps and uncertainties and address performance findings to adaptively manage monitoring program in response to adaptive management, policy decisions and scientific needs**	1	**Collaborate** with Work Groups and PSP staff to evaluate questions, gaps, priorities, methods and modify using adaptive management tools	**Evaluate** questions, gaps, priorities, methods and modify using adaptive management tools Synthesize evaluation results	**Develop** recommendations on needed modifications and re-alignment of monitoring plans Influence appropriate decision- making processes	Informed and provide input Influence appropriate decision making processes	Informed and provide input Influence appropriate decision making processes	Informed and provide input Influence appropriate decision making processes	Staff will develop and manage a process and advise the Steering Committee Make	**Capture and Share Learning**

Row	Product	Goal	Program Components							Adaptive Management Step
			Monitoring entities	**Work Groups**	**Steering Committee**	**Science Panel (SP)**	**Ecosystem Coordination Board (ECB)**	**Leadership Council (LC)**	**PSP Staff**	
				at topic level	Synthesize evaluation of questions, gaps, priorities, methods and modify as needed using adaptive management tools across topics			When change is required, facilitates/ moderates discussions about modifying the Monitoring Program, monitoring plans or activities of monitoring entities	recommendations to SP, LC, and SC	

Puget Sound Coordinated Ecosystem Monitoring and Assessment Program

Launch Committee's Recommendation for Forming a Steering Committee

The Launch Committee for the Puget Sound Coordinated Ecosystem Monitoring and Assessment program (Monitoring Program) was tasked by the Puget Sound Partnership to provide recommendations for appointing the Steering Committee. The objective of this document is to provide 1) criteria for membership in the Steering Committee, 2) a list of organizations and interested stakeholders that should be represented and 3) a process for making the appointments.

Role and Authority of the Steering Committee

The monitoring and assessment program envisioned in the Charter will comprise a set of topic-specific and cross-topic work groups, directed by an independent Steering Committee. The Steering Committee is the primary decision-making body that will oversee and guide the development and implementation of the regional Monitoring Program. The Steering Committee will provide direction to the Work Groups especially with regard to regional information needs, questions, and priorities for monitoring and assessment. It is ultimately accountable for decisions affecting the regional monitoring and assessment program. The Steering Committee will identify and commission the Work Groups and ensure coordination of Work Group activities and integration across topics (some work groups are expected to be permanent, while others may be convened for a limited duration in order to address a particular cross-topic question or topic of interest).

In making its decisions and recommendations, the Steering Committee will seek and consider input from the Science Panel (especially) and Ecosystem Coordination Board, as well as from the Work Groups. The Steering Committee may direct and approve monitoring and assessment work plans, propose monitoring plan changes, approve quality assurance plans, direct or coordinate data synthesis and inter-disciplinary approaches, integrate information and recommendations from the workgroups, commission or recommend data analyses and assessment, and direct other strategic or technical work as needed and appropriate. The Steering Committee may review and recommend funding needs and priorities to support the regional monitoring and assessment program, and lead or assist in the development of a regional monitoring and assessment funding strategy.

The Steering Committee will approve and adopt the charter, including any bylaws, revisions, or updates as/when needed.

Proposed Criteria for Membership

- Membership should be focused on entities whose resource management and environmental protection missions, mandates and interests depend on information from ecosystem monitoring and assessment, and should span local, regional, state and federal interests to ensure that needs at all scales are met.
- Members should collectively represent the variety of interests, opinions and viewpoints about Puget Sound monitoring that exist in the region.
- One goal of the Monitoring Program is to build and coordinate across existing monitoring efforts. To ensure coordination among the various monitoring programs, consideration may be given to representing established groups such as the Puget Sound Assessment and Monitoring Program (PSAMP), local and watershed-based organizations that support salmon recovery and adaptive management in Puget Sound, the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP), the Hood Canal Dissolved Oxygen Program (HCDOP), the Puget Sound Toxics Loading Steering Committee, the Cooperative Monitoring, Evaluation and Research Committee (CMER), citizen-based monitoring organizations, and others.

Given the criteria listed above, we recommend an inclusive committee where a variety of individual organizations are represented. Upon invitation by the Executive Director of the Puget Sound Partnership, caucuses, agencies, and associations should provide to the Puget Sound Partnership the names of people who are best suited to serve. Puget Sound Partnership employees staff the Steering Committee and sit on the committee ex-officio. Decisions should not require consensus but rather be made via majority rule.

The following table lists the types organizations and number of seat of to be represented on the Steering Committee.

Organizations	**# of seats**	**Entities that make the appointment**
Tribes	3	Tribal caucus
Non-profit environmental sector	2	Environmental caucus
Business • Small business • Large business	2	Business caucus

Local governments* • Cities • Counties *Should pay particular attention to size of jurisdictions and where they are located in Puget Sound	4	Association of Washington Counties and Cities recommends candidates
State government Examples: • DNR • WDFW • DOE • DOH • PSP • DOT • Conservation Commission • Dept of Agriculture • GSRO • RCO	4	State caucus
Federal government Examples: • EPA • NOAA • USFWS • USGS • Navy • ACOE • US Forest Service • Washington Sea Grant	3	Federal caucus
Watershed-based groups, to represent local monitoring interests	1	Salmon Recovery Council
Lead Integrated Organizations, to represent Action Areas	2	Puget Sound Partnership

Academia	1	Science Panel
Staff from citizen-science programs or staff from coordinating organizations to represent citizen-science perspective.	1	Puget Sound Partnership
Total	23	

Criteria for Steering Committee Members

The following criteria should be considered for selecting specific people to serve on the Launch Committee.

- The Monitoring Program will tackle a range of questions related to the status and trends f water quality and quantity, habitats, species and food webs, and human health and wellbeing, as well as the effectiveness of recovery actions. The program Charter describes the goal to deliver information on a variety of indicators for ecosystem, human health and well-being, programmatic components, threat reduction and strategy effectiveness. No single program covers all of these topics and indicators. Therefore, the members of the Steering Committee must have vision and be able to think broadly, objectively and cooperatively about an ecosystem monitoring strategy that coordinates the work of various organizations and integrates across scales and topics.

- The Monitoring Program is designed such that the Work Groups works at the scientific and technical level, where as the Steering Committee works at the science-policy interface (Figure 1). Therefore, the Steering Committee members should work at high levels in their organization as science program managers or environmental policy leads working closely at the science-policy interface.

- Members should be key players in implementing Puget Sound monitoring operations or establishing policies that influence Puget Sound monitoring. Members should have access to resources to support monitoring, decision-making authority, or influence over decisions that can contribute to Puget Sound monitoring.

- Members are science program managers or policy experts that have experience working within an adaptive management framework.

- Members should be committed to prepare for, attend meetings, and play an active role.

- Members should enjoy working collaboratively.

- Members should have a desire to work towards a common goal: building a world class, transparent and trusted coordinated ecosystem monitoring program that provides credible data.